

New and interesting Trichoptera collected by Dr. H. Bertrand in Southern Africa in 1959

by

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ABSTRACT

A new species of *Chimarra*, *C. bertrandi*, (Philopotamidae), is described from the Zambezi River, Rhodesia, as are larvae of the genus *Parecnomina* from the Western Cape Province, and probable larvae of *Psychomyiellodes* from Lesotho, the Eastern Transvaal and East Griqualand (both Psychomyiidae, Ecnominae). Their affinities are briefly discussed, and a key to the genera of Ecnomine larvae from Africa is given.

INTRODUCTION

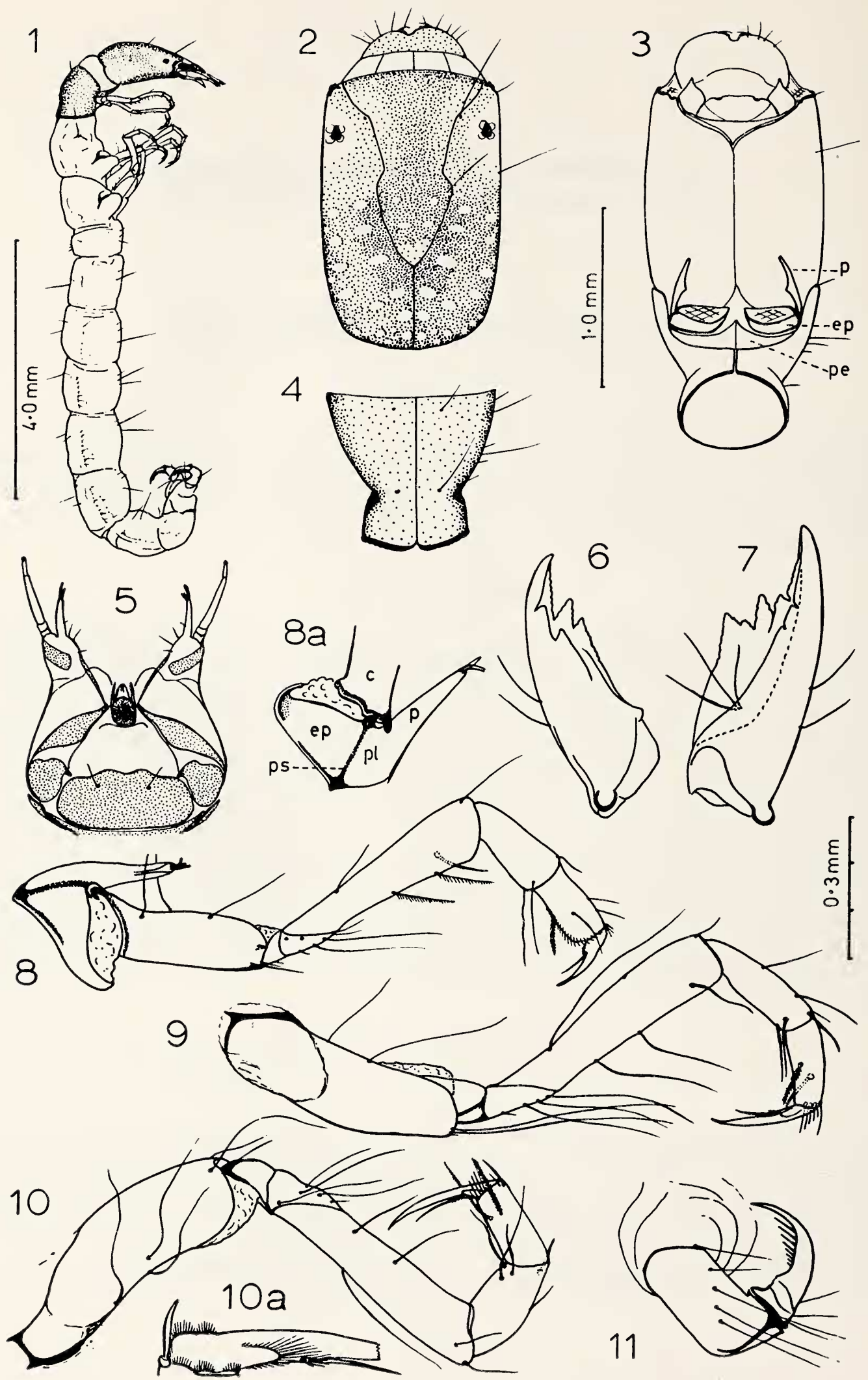
The Trichoptera described in this paper formed part of a collection of freshwater insects made by Dr Henri Bertrand of the Paris Museum during 1959 in South Africa, Rhodesia, Zambia (then Northern Rhodesia), Lesotho (then Basutoland) and Swaziland. All the Trichoptera collected were sent to the author for identification by Dr Bertrand, to whom grateful thanks are due for the opportunity of working on this material and for presenting the holotype male (pupa) of the new species found, *Chimarra bertrandi*, to the Albany Museum.

The Trichoptera represented in this collection comprised twenty-three genera in nine or more families. Nearly all specimens were larvae or pupae, identifiable in most cases only to generic level as comparatively few African larvae have been correlated with their imagos. Six species were, however, definitely recognizable, including the one mentioned above.

The full list of Trichoptera collected, with localities and additional data, is being published elsewhere (Bertrand, in press), only the most interesting specimens being described here in some detail, these being the Ecnomine larvae *Parecnomina* and ? *Psychomyiellodes*, both described here for the first time, and the two species of *Chimarra*. A key to the genera of Ecnomine larvae known from Africa is also given below.

Family PSYCHOMYIIDAE THE LARVAE OF *PARECNOMINA* KIMMINS (Figs 1—11)

The larvae of this Psychomyiid genus have not as yet been described. Dr Bertrand's collection included one good mature larva belonging to it, recognizable as such because Professor (then Mr) A. D. Harrison and I reared imagos from several similar larvae collected in stony backwaters of the Great Berg River, Western Cape Province, some years ago. (See Harrison and Elsworth 1958 and Harrison 1958; in both papers the genus was referred to as *Protodipseudopsis*.) The specimen in the Bertrand collection (sample SU 35) came from a mountain stream on the eastern side of the Franschoek Pass (altitude 400 m, 14.ix.59),



within a few kilometres of that part of the Berg River from which the larvae reared were collected, though from a different river system (the Breede or Breë River). All these larvae appear very similar and may well belong to the same species of *Parecnomina* (an apparently new species which will be described elsewhere); they certainly belong to the same genus. The description given below was based on both Bertrand's specimen and the Berg River material, and applies to all of them.

DESCRIPTION OF LARVA

(In alcohol: figs 1—11) Length of apparently mature larva about 8—12 mm (Fig. 1); see remarks at end of description.

Head (Figs 2, 3) $1\frac{1}{2}$ times as long as wide, shaped like that of an *Ecnomus* larva and with similar pattern of muscle spots; eyes medium-sized, set moderately far forward under lens-like modifications of cuticle; antennae minute, near base of mandibles; frontoclypeus as illustrated; anteclypeus with four divisions as in *Ecnomus*, divisions not easily seen.

Mouthparts (Figs 3, 5): labrum large, sclerotized, somewhat asymmetrical (left side smaller than right in all available specimens); labial lobe (ligula) cone-shaped, shorter than maxillae, strongly downcurved, labial palps clearly visible, tipped with sensilla; maxillary lobes slender, shorter than maxillary palps, tipped with sensilla; maxillary palps very long, slender, fourth joint much longer than the other joints together; mandibles (Figs 6, 7) large, strong, each with powerful apical tooth, other teeth as shown, two setae on outer side, left mandible larger than right, hollowed, with inner brush of 3—8 setae, right mandible hollowed only at apex, without inner setae; mentum a single subovoidal sclerite with sinuous anterior margin; submentum a wide, shallow triangle.

Thorax: pronotum (Figs 3, 4) well sclerotized, unpatterned, with narrow black posterior border, nipped in posteriorly as in a Polycentropodid or Philopotamid larva, pronotal sclerites completely encircling prothorax, the sides meeting in a mid-ventral suture. Meso- and meta-thorax entirely membranous.

Legs (Figs 8—10) slender, sub-equal, setae mainly long, thin, hair-like, sparse except for fringe of spinules on inner margin of fore-tarsus; a few plumose setae as shown, paired stout spines towards apices of tibiae. Limb claws long, slender, each with a single "basal" spine articulated a third to half-way along claw; mid- and hind tarsi tipped with a row of small spines overlapping base of claw; hind claw (enlarged, Fig 10a) with a fan of minute setae on each side proximal to the "basal" spine, and groups of smaller setae surrounding base of claw; mid-claw with the fans of setae only, foreclaw without fans, with a few minute setae along margin basal to spine. Forelegs well sclerotized, brown, mid- and hind legs less so, whitish.

Figs 1—11, larva of *Parecnomina* sp. (drawings 1, 2, 4, 8—11 from SU 35, remainder from Berg River specimens):

1. Entire larva (lateral).
2. Dorsal view of head (mandibles and palps omitted).
3. Ventral view of head and pronotum (mandibles and forelegs removed—bases indicated by cross-hatching).
4. Dorsal view of pronotum.
5. Mouthparts (ventral).
6. Right mandible (ventral view).
7. Left mandible (ventral view).
8. Right foreleg with pre-episternum and epimeron.
- 8a. Base of foreleg, pre-episternum etc. further enlarged (inner view; muscles etc. omitted).
- 9, 10. Right mid- and hind legs.
- 10a. Part of hind claw further enlarged.
11. Right anal proleg showing claw.

Explanation of lettering:

c = coxa, p = pre-episternum (1st pleural sclerite), ep = epimeron, ps = pleural sulcus, pe = post-epimeral sclerite, pl = 2nd pleural sclerite.

Foreleg with slender, pointed pre-episternum tipped with sensillum and two setae; pre-episternum not demarcated from second coxal pleurite by a suture (see Tindall 1963 for terms used), but both separated from the epimeron by the pleural sulcus (Fig 8a). Between the epimera and the ventral extensions of the pronotum lies a pair of sub-triangular sclerites, separated mid-ventrally by a suture. I am calling these "*post-epimeral sclerites*" for want of a better term (see Fig. 3).

Abdomen (Fig. 1): long, slender, smooth, with few long setae except where long hairs form a lateral line, which is abraded and inconspicuous in most specimens. Anal claws (Fig. 11) strong, curved, with long ventral comb teeth, without dorsal hooks; lateral sclerites on anal prolegs pale, inconspicuous. No tracheal gills. Five anal blood gills.

REMARKS

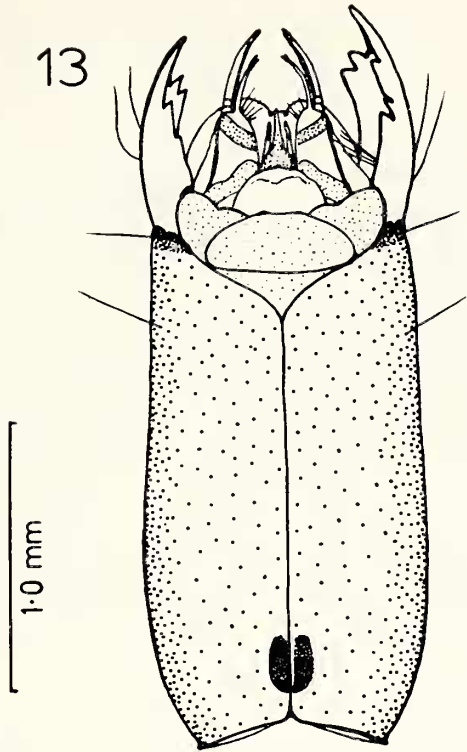
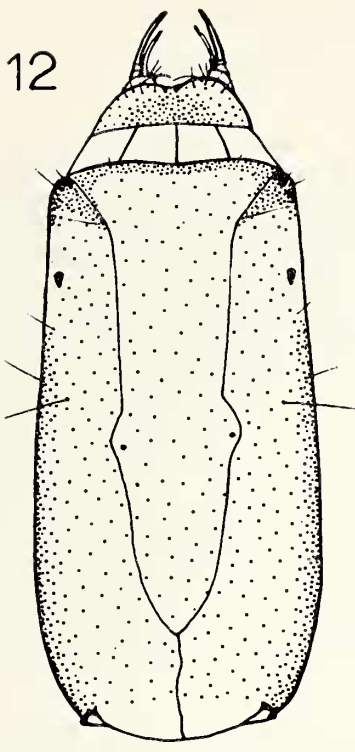
This is the larva described and figured by K. H. Barnard (1934 pp. 376, 377, Fig. 44) and provisionally assigned to *Dipseudopsis*. Ulmer (1957 p. 285) pointed out that this was not the larva of *Dipseudopsis*; he considered that it belonged to the Polycentropodinae, and suggested that it might be the larva of *Polyplectropus*. It has since been shown, however, through the correlation of the Berg River larvae with their imagos (of both sexes) that Barnard's larva must be placed in the genus *Parecnomina* (Psychomyiidae: Ecnominae). Barnard's original material came from tributaries of the Breede River in the Franschhoek mountains, as did Dr Bertrand's specimen; the Breede and Berg rivers have adjacent catchments on either side of the same range of mountains. In the Berg River *Parecnomina* larvae inhabited sheltered backwaters in the foothills, usually building rambling tubes on stones. These were conspicuous because of their comparatively large size, but were not found in large numbers.

I have examined Barnard's original material of his "? *Dipseudopsis* larva", which comprises four specimens in alcohol. Two of these are almost exactly like the ones collected by Harrison, myself and Bertrand; Barnard evidently drew one of these. The other two are similar in all respects excepting that they are larger (10—12 mm), darker, and less clearly patterned, the spots showing faintly as minute white dots. All four have more conspicuous lateral belts of abdominal hairs (lateral lines) than any of the other specimens available. It is possible either that these represent two different species of *Parecnomina*, or that they represent ultimate and penultimate instars of the same species, in which case our material would be in the penultimate larval instar. Only collection of further material can establish which is the case.

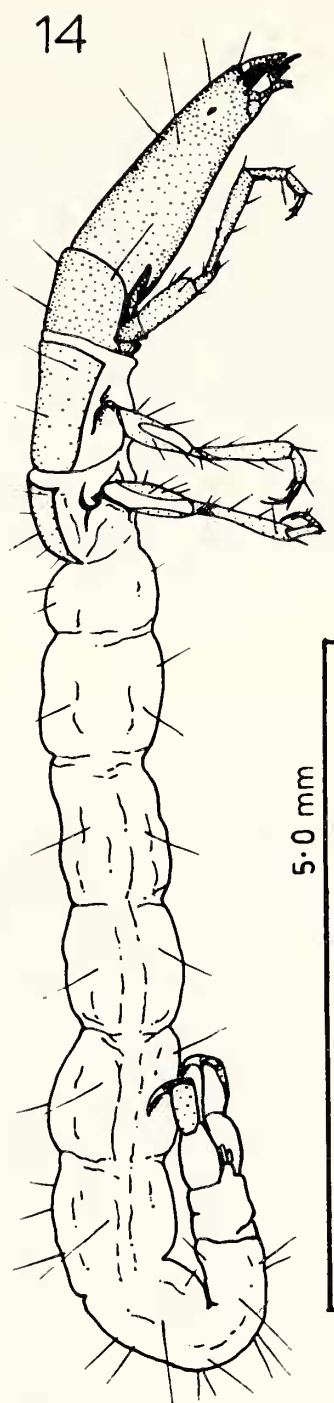
It is not surprising that both Barnard and Ulmer considered the *Parecnomina* larva to be a Polycentropodid, as I originally did myself, because only the pronotum is sclerotized, and because larvae of the Ecnominae and the Polycentropodinae have many characters in common. In fact, *Parecnomina* larvae, on account of the membranous meso- and metanota, run down to the Polycentropodinae in my own working keys, and are only separable from larvae of that group on the basis of general appearance (shape and setation of head and limbs).

Figs 12—21, probable larva of *Psychomyiellodes* sp. (drawings 14, 16, 18, 19 from SU 10, remainder from NIWR specimens):

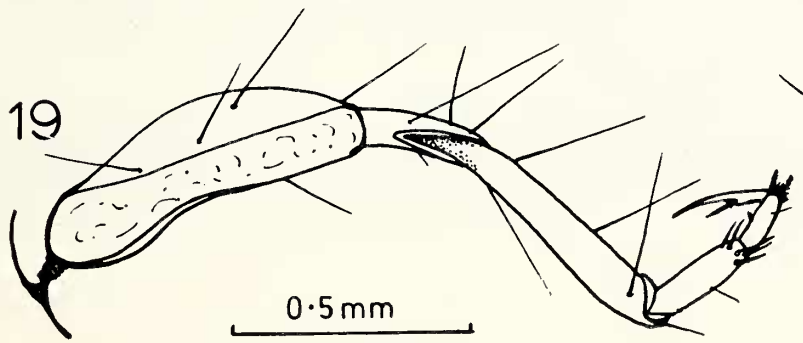
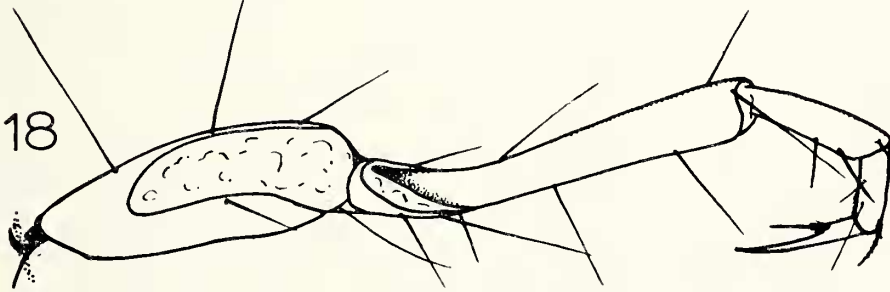
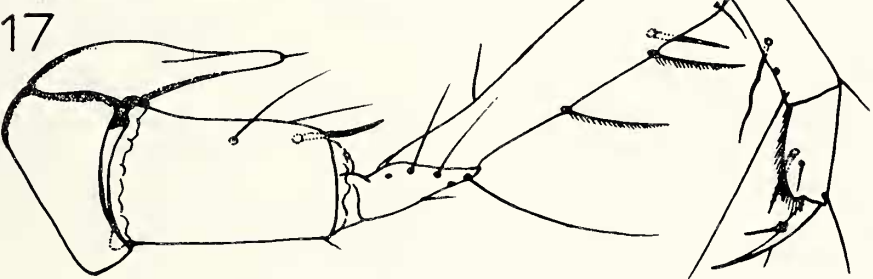
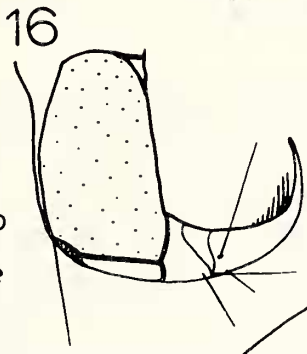
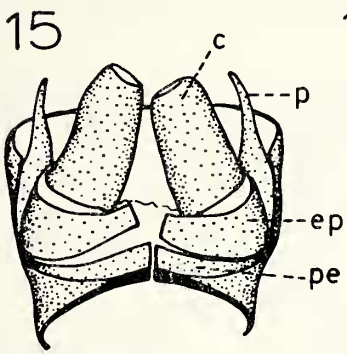
12. Head and mouthparts (dorsal).
13. Head and mouthparts (ventral).
14. Entire larva (lateral).
15. Anterior thoracic segment (ventral).
16. Right anal claw.
17. Right fore leg with pre-episternum and epimeron.
- 18, 19. Right mid- and hind legs.
- 20, 21. Right and left mandibles (ventral view).



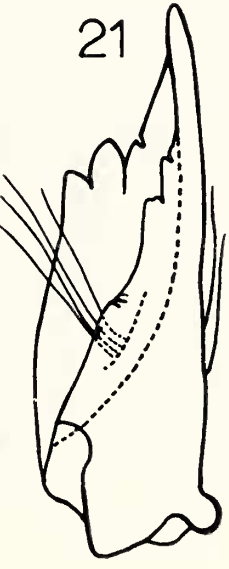
1.0 mm



5.0 mm



0.5 mm



0.2 mm

THE PROBABLE LARVA OF *PSYCHOMYIELLODES* MOSELY
(figs 12—21)

Imagos of this genus have never to my knowledge been correlated with their larvae. Dr Bertrand's collection, however, included a single large, powerful larva (sample SU IOL) from a mountain stream on the Marakabei road, Lesotho, (altitude 2 340 m, 2.ix.59). This larva evidently belongs to the Ecnominae, and is similar to several others in the N.I.W.R. collections. Now that the larva of *Parecnomina* has been correlated, only two known genera of African Psychomyiidae remain unaccounted for; these are *Psychomyiellodes* and *Paduniella*. The larvae at present under consideration are manifestly much too large to be attributable to *Paduniella*, so I have assigned them provisionally to *Psychomyiellodes*, the only other possibility being a hitherto unrecorded or unknown genus of fairly large size. Although this is by no means impossible, it is not very probable; none the less final identification must await the correlation of the larvae with their adults, or the discovery of mature male pupae. The larvae in question are typically Ecnomine, as are *Psychomyiellodes* imagos.

DESCRIPTION OF LARVA

(In alcohol: Figs 12—21) Length of apparently mature larva (Fig. 14) about 13 mm. *Locality*: stream near Marakabei, Lesotho.

Head (Figs 12, 13) long, slender, predatory in appearance, reminiscent of that of the Hydropsychid *Polymorphanusus* in shape, about twice as long as wide, rich chestnut brown, unpatterned, except for twin dark spots on ventral side of head on either side of midline near proximal end; eyes very small, set far forward, very small inconspicuous lens-like modifications of cuticle above them; frontoclypeus long, narrow, somewhat expanded near middle, anteclypeus divided into four; antennae minute, at base of mandibles.

Mouthparts (Figs 13, 20, 21): labrum large, sclerotized, almost semicircular but with median indentation, asymmetrical; labial lobe tapered to a slender point, downcurved, much shorter than maxillary palps, labial palps present, long, tipped with sensilla; maxillary lobes fairly short, slender, palps longer and stouter than lobes, with elongated fourth segment as in *Ecnomus* and *Parecnomina*. Mandibles (Figs 20, 21) long, left one the larger, strongly scoop-shaped with a few inner bristles, teeth as shown; right mandible only apically hollowed, with four teeth and no inner bristles, both very heavily sclerotized; mentum undivided, a large, well-coloured, almost semicircular sclerite; submentum a shallow triangle.

Thorax: all three thoracic nota sclerotized, pronotum most heavily so, chestnut-brown with black posterior border; meso- and metanota less strongly sclerotized, yellowish; all unpatterned. Pronotal sclerites encircle body, sides almost meeting ventrally; paired post-epimeral sclerites present between pronotal extensions and epimera (Fig. 15).

Legs (Figs 17—19) subequal, forelegs slightly longer, chestnut-brown, robust, well sclerotized, mid- and hind legs paler, weakly sclerotized, setae sparse, hair-like, a few spines and feathered setae present as shown. Pre-episternum of foreleg tapering, similar to that of *Ecnomus* but thicker and blunter, tipped with a small seta, fused to pleuron basally (i.e., without suture between pre-episternum and 2nd pleural sclerite), epimera continued ventrally round coxae, almost meeting in mid-line (Fig. 15).

Abdomen long, smooth, anal prolegs and claws relatively smaller than those of *Ecnomus* or *Parecnomina*, proleg with pale lateral sclerite (Fig. 16), claw curved, almost right-angled, with row of ventral teeth (no dorsal hooks). No tracheal gills, only two anal gills visible (there are probably five as in *Ecnomus*).

REMARKS

Positive identification of this larva must await correlation with adults or mature male pupae. Specimens similar to Bertrand's, in the Albany Museum collection, come from the following localities: Bridal Veil Falls, Sabie River, Eastern Transvaal, Hyslop's Creek, Barberton District, Eastern Transvaal, and a mountain tributary of the Umzimvubu River, East Griqualand, in all cases from stones in current. Adults of the genus *Psychomyiellodes* have been infrequently collected in Southern Africa. *P. dentatus* Kimmins has been recorded from the Tugela Valley, Natal National Park, and from the Kruger National Park, Eastern Transvaal (Jacquemart 1963), and *P. obscurus* Kimmins from Rhodesia (Kimmins 1957). There is also an unidentified male *Psychomyiellodes* from Howick Falls, Natal, in the Albany Museum collection.

The larva, as can be seen from the illustrations, is very like those of *Ecnomus* and *Parecnomina*, showing only minor differences from the former, mainly in the head. Differences from *Parecnomina* are more obvious as all three thoracic nota are sclerotized in both *Psychomyiellodes* and *Ecnomus* larvae, and both lack the curious development of setae on the mid- and hind claws found in *Parecnomina* (Fig. 10a).

KEY TO LARVAE OF ECNOMINAE (PSYCHOMYIIDAE) FROM AFRICA (GENERA)

Like most of the older established groups of Trichoptera, the Ecnominae have had a chequered history. McLachlan (1878) included *Ecnomus* in his Section V of the Hydropsychidae, together with *Tinodes* (now placed in the Psychomyiinae—corrected to Psychomyiidae), because the adult was so different from *Polycentropus*. Ulmer (1903), too, included *Ecnomus* in the Hydropsychidae, but later removed it to the Polycentropidae (1907), and then to the Psychomyiidae (1910). Lestage (1921) suggested that the Ecnominae should be raised to family rank, but subsequently (1926) treated the group as a subfamily, dividing the Psychomyiidae into the Psychomyiinae, Ecnominae and Paduniellinae. At present the Ecnominae are still treated as a subfamily of the Psychomyiidae in the United Kingdom, whereas in the U.S.A. the entire family Psychomyiidae has been incorporated with the Polycentropidae by Milne, Ross and others since the discovery of the "intermediate" genus *Cernotina*, the combined families being referred to as the Psychomyiidae. Lepneva (1956) and Marlier (1958, 1962), on the Continent follow Lestage's 1921 suggestion in raising the Ecnominae to family rank.

Consideration of the young stages, of the African species at least, shows that there are more similarities between the larvae of the Ecnominae (*Ecnomus*, *Parecnomina* and the probable larva of *Psychomyiellodes*) and of the Polycentropidae than between those of the Ecnominae and the Psychomyiidae. In these Ecnominae and in the Polycentropidae known to me, the mentum is undivided, the labium is relatively short, the limb claws have a single "basal" spine situated $\frac{1}{3}$ to $\frac{1}{2}$ way along the claw, the pre-episternum of the foreleg is fused with the second pleural sclerite and the epimeron extends ventrally round the coxa almost to the mid-ventral line. In contrast the African Psychomyiidae have a divided mentum (except in *Abaria*), a very long labium, limb claws with one or two spines arising at the base of the claw, the pre-episternum of the foreleg demarcated from the second pleural sclerite by a black line (? suture), and short epimera which do not extend ventrally round the coxae. Paired post-epimeral sclerites are present in all three groups, differing in shape and extent from one to the other.

Thus it would appear from the larval characters that if any of these groups should be amalgamated, it should be the Ecnominae and the Polycentropidae. On the other hand, however, if one considers the characteristics of the adults, of African genera at any rate, one discovers that it is extremely difficult to find characters which can be used to separate the Ecnominae and the Psychomyiidae (Kimmins 1957), whereas the Polycentropidae are

quite easily distinguished from both. It would appear, therefore, that in the present state of our knowledge it is preferable to leave the Ecnominae together with the Psychomyiinae in the Psychomyiidae, and the Polycentropodinae in the Polycentropodidae, at least until someone is in a position to undertake a world revision of these families on the basis of both adult and larval stages. At present, however, the larval stages of some of the genera and subfamilies are unknown. For example, the larvae of the subfamilies Paduniellinae and Hyalopsychinae are unknown, as are those of several genera in other subfamilies. Although this classification may lead to certain anomalies, such as the position of *Parecnomina* and *Cernotina*, it does not really pose a problem in the case of the former at least, as *Parecnomina* can readily be identified and keyed out, and there appears to be no doubt that it does in fact belong in the Ecnominae. Such "intermediate" genera can perhaps best be regarded as indicative of possible linkages and relationships between the various groups.

The key given below includes the three known African genera, in one case identification of the larvae being tentative. This key applies primarily to mature larvae, but can also be used to identify all except very early instars if this is done with caution. Couplets have been expanded to assist in checking identifications.

Larvae of all three genera have certain characteristics in common, including slender build, comparatively long head, slender limbs and sparse setation, setae being fine and hair-like. Anal claws have long ventral teeth. These characters can be used to separate the one genus which has only the pronotum sclerotized, *Parecnomina*, from larvae of the Polycentropodinae (family Polycentropodidae) with which it might otherwise be confused. Polycentropodine larvae tend to be stouter than Ecnomine larvae, with shorter heads, stouter limbs and many strong setae; anal claws various, with dorsal hooks and ventral teeth, ventral teeth only, or plain.

KEY

- 1A Larvae with only pronotum sclerotized. Head about $1\frac{1}{2}$ times as long as wide; patterned. Eyes medium-sized; larvae medium-sized (length 8—12 mm) (see Figs 1—11) *Parecnomina*
- 1B Larvae with all three thoracic nota sclerotized. Head either about $1\frac{1}{3}$ times or twice as long as wide 2
- 2A Head long, narrow, length about twice width, left mandible with inner setae, right without; eyes very small; head, pronotum, forelegs, pre-episternum more heavily sclerotized than other nota and legs; prosternal sclerites almost meet ventrally; large larvae (length 12—14 mm), head and thoracic nota plain, unpatterned (see Figs 12—21)
?Psychomyiellodes
- 2B Head more square, length about $1\frac{1}{3}$ times width, right mandible always with short inner setae, left sometimes with a few long setae; eyes normal size; head, all thoracic nota and forelegs fairly equally sclerotized; prosternal sclerites separated by a median gap; medium-sized larvae (length 8—9 mm); head and thoracic nota usually patterned (for figs see Scott 1963) *Ecnomus*

Family PHILOPOTAMIDAE

Chimarra krugeri Jacquemart (Figs 22—4)

Chimarra krugeri Jacquemart, 1963: 395—7, Figs 48, 49.

MATERIAL STUDIED: 1 mature ♂ pupa, disclosing genitalia, south bank of the Zambezi River above the Victoria Falls, Rhodesia, 1.viii.59. Coll. H. Bertrand. Found together with the next species and a number of female and immature pupae in an aggregation of soft sand-grain

cases. Larvae (and larval sclerites in pupal cases) also found, but to date there seems to be no way of distinguishing the different species of *Chimarra* in the larval stage.

REMARKS: The genitalia of the pupa (Figs 22—4) resemble those of *C. krugeri* Jacquemart sufficiently closely for it to be placed in the same species with certainty. The cleared genitalia have nevertheless been drawn so as to show features not clearly seen in Jacquemart's figures (Jacquemart 1963 Fig 48 A—C), particularly the two strongly sclerotized points at the tip of each clasper, the thickened ridges along the paired dorsal projections of the 10th tergite, and the arrangement of small sclerites in the aedeagus. The cerci are transparent and difficult to see, and are stalked as shown in Jacquemart's Fig. 48 B, not sessile as appears in Fig. 48 C. The type locality was the Kruger National Park (Eastern Transvaal, R.S.A.); the distribution is thus extended to Rhodesia.

Chimarra bertrandi n. sp.

MATERIAL STUDIED: 1 mature ♂ pupa, disclosing genitalia, in soft sand case together with larval sclerites; also two immature ♂ pupae in similar cases, evidently of the same species, all from south bank of the Zambezi River above the Victoria Falls, Rhodesia, altitude 870 m, 1.viii.59, coll. H. Bertrand. Collected together with *C. krugeri*. Holotype ♂ (pupa) deposited in Albany Museum.

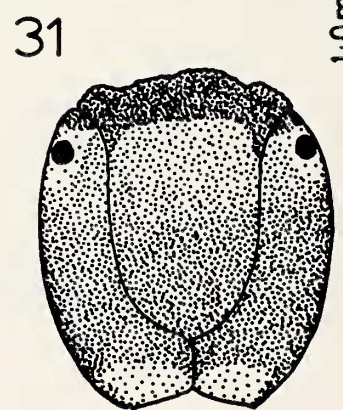
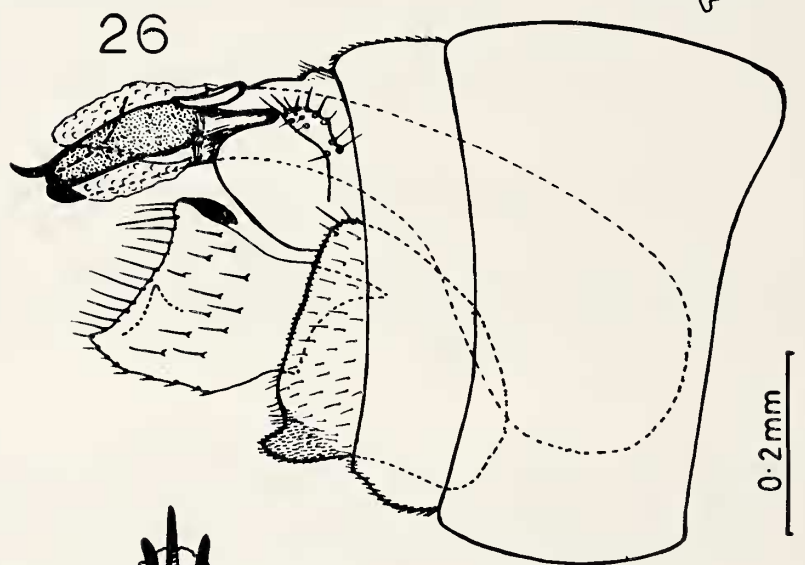
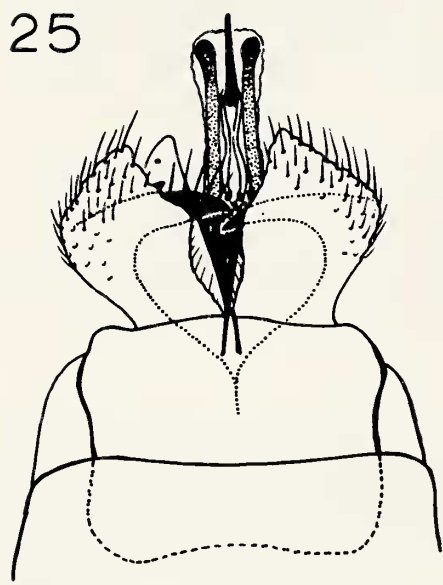
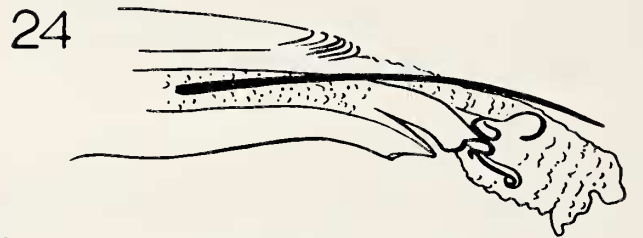
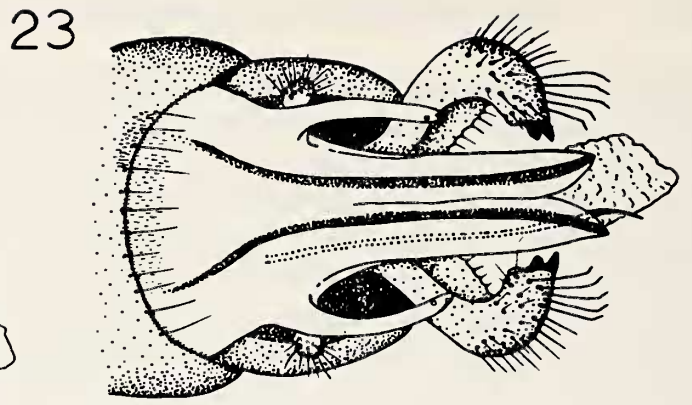
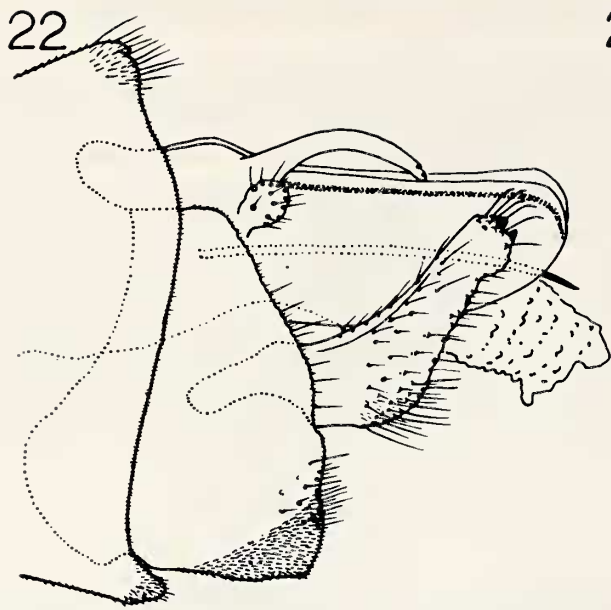
DESCRIPTION OF ♂ HOLOTYPE (PUPA) (in alcohol) (Figs 25—8)

Length of ♂ pupa 5.5 mm; wings not expanded, colour (unexpanded) dusky brownish-fawn. Pupal mandibles long, strong, with large tooth at apex of each; abdomen with paired hook-bearing plates on tergites 3—8 (anterior) and 5 (posterior; stalked); no lateral processes, no gills.

Male genitalia (Figs 25—8): eighth segment normal. Dorsum of ninth segment membranous or lacking; ninth sternite large, with short, laterally compressed, sub-triangular ventral process, finely pubescent. Tenth tergite complex, forming a pair of lightly sclerotized dorso-lateral processes, directed caudad, somewhat resembling birds' heads, each with a small, darkly sclerotized, lateral "beak"; in lateral view flattened, each bearing two sensilla; aedeagus visible between the processes. Attached to these processes basolaterally, also forming part of the tenth tergite, is a pair of sub-triangular plates, apically rounded, partly enclosing aedeagus, thus visible in lateral view, also in dorsal view by transparency when cleared; arising near base of each plate is a short, stalked cercus, bearing setae. Aedeagus cylindrical with bulbous base, apex partly membranous, with a pair of strongly sclerotized plates, broad in lateral view, narrower and outwardly curved in ventral view; between these plates is a short, stout, upcurved apical spine with strong basal attachments. Claspers large, spatulate, outwardly convex, hollowed inside, strongly setose towards apices, broadly leaf-like in ventral view, with a small median lobe on each, in lateral view apically truncate; in dorsal and posterior views it is seen that each clasper has a broad, strongly sclerotized, inwardly projecting beak-like process, bearing several stout setae, on the upper side, and a small sclerotized point within the lower side, directed upwards.

REMARKS

This species closely resembles Barnard's *C. cereris* (Barnard 1934) in certain respects, with somewhat similarly shaped clasper and tenth tergite, but also shows several clear points of difference. *C. bertrandi* n. sp. differs from *C. cereris* Barnard in the shape of the paired upper processes of the tenth tergite and of the lateral aedeagal plates (which in *C. cereris* do not have squared ends but turn downwards at the apices), also in the presence of the median aedeagal



1.0mm

spine and of the ventral point on the ninth sternite. The claspers differ in having a small median lobe at the base of each.

It thus appears that the two species, although evidently closely related, differ sufficiently to be considered separate species, and it gives me pleasure to name this one *Chimarra bertrandi*, in honour of Dr Henri Bertrand who collected the specimens.

It is unfortunate that it has only been possible to compare *C. bertrandi* with Barnard's drawings, and not with his type material. Dr A. J. Hesse, of the South African Museum, very kindly searched for Barnard's material of *C. cereris* for me, and sent me what was available for examination. This material comprised eight pinned specimens, three with genitalia cut off and mounted in gum arabic on card, one without genitalia, and one in spirit. All those with genitalia proved to be females in poor condition. There had evidently been a ninth specimen which was no longer there; either this or the one lacking genitalia could have been the male as no other specimens could be found. There thus appears to be no male holotype in existence.

I have left *C. bertrandi* in the genus *Chimarra* for the present, as being very close to *C. cereris* which Barnard placed there. Being pupal material the wings are useless for study purposes, and Lestage's erection of the genus *Chimarrhafra* (Lestage 1936) depended on certain differences in wing venation—namely the absence of R_1 in the hind wing and of the bare cell in the fore wing, together with a regular instead of irregular anastomosis. These characters certainly apply to *C. georgensis* Barnard (1934), chosen as type species for *Chimarrhafra* by Lestage, but it is strange that Lestage also included *cereris* in his genus, because Barnard's figures of the wings show *cereris* as having wings of the normal *Chimarra* type, with bare cell and irregular anastomosis in the fore wing and R_1 present in the hind wing, and the females (if they belong) bear this out. Ross (1956) suggested that *Chimarrhafra* should be a subgenus of *Chimarra* rather than a full genus, but evidently did not notice the discrepancies between *cereris* and Lestage's generic diagnosis. Final placement of the present species must await the discovery of male imagos.

NOTE ON THE *CHEUMATOPSYCHE* SPECIES FOUND (HYDROPSYCHIDAE)

In the Hydropsychid genus *Cheumatopsyche*, amongst the larvae, certain species or species groups can be recognized by the shape of the anterior margin of the frontoclypeus and the colour pattern of the head. This will probably prove to be the case in most, if not all, the species in this genus, but in only a few instances have the larval stages been definitely correlated, and even in those the range of variation is unknown.

Larvae from the Bertrand collection were therefore assigned to a species group wherever possible, for example *Cheumatopsyche* sp., cf. *afra*, or cf. *maculata*, or cf. *thomasseti* (see Figs 29–31). In such cases the shape of the anterior margin of the frontoclypeus was very close to, though not quite identical with, that of identified larvae of *C. afra*, *C. maculata*

Figs 22–4, *Chimarra krugeri* Jacquemart, ♂ pupa (Rh la)

22. ♂ genitalia, lateral.

23. ♂ genitalia, dorsal.

24. Distal end of aedeagus, lateral.

Figs 25–8, *Chimarra bertrandi* n. sp., holotype, ♂, (pupa; Rh lb)

25. ♂ genitalia (ventral.)

26. ♂ genitalia (lateral).

27. ♂ genitalia (dorsal view of claspers).

28. ♂ genitalia (dorsal view of 9th and 10th tergites and aedeagus, rest omitted).

Figs 29–31, *Cheumatopsyche* spp. larvae, dorsal view of heads.

29. *Cheumatopsyche* sp., cf. *afra*.

30 A, B. *Cheumatopsyche* sp., cf. *thomasseti*, probably 2 species.

31. *Cheumatopsyche* sp. cf. *maculata*.

or *C. thomasseti*, or else, although morphologically the same, there was a difference in the colour pattern. As work on the Southern African Trichoptera proceeds, it is hoped that larvae of all the *Cheumatopsyche* species will be correlated with their imagos and will therefore become identifiable.

ACKNOWLEDGEMENTS

In addition to my indebtedness to Dr Bertrand for submitting his collection to me for identification, I owe grateful thanks to Dr A. J. Hesse of the South African Museum for access to Barnard's material of *Chimarra cereris*, and to Dr F. C. J. Fischer for his kind help; also to Professor B. R. Allanson of Rhodes University and Mr C. F. Jacot-Guillarmod of the Albany Museum, Grahamstown, in whose departments this work has been carried out. The permission of the Director of the National Institute for Water Research to publish this work is gratefully acknowledged.

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